

## **Terminal Objectives**

# **EMT-B Monitoring Endorsement**

### **Terminal Objectives for the EMT-Basic Monitoring Endorsement**

The purpose of the Monitoring Endorsement for EMT-B is to provide the EMT-B with the knowledge and skills to collect diagnostic values and initiate corrective actions including operating a pulse oximeter, blood glucose monitor, end-tidal CO<sub>2</sub> monitor, and manual defibrillation.

Patient care should always be based on patient presentation and Montana Prehospital Treatment Protocols.

## **FORWARD**

The Montana Board of Medical Examiners (BOME) developed the EMT endorsement process to provide the local EMS medical director the ability to expand the individual EMT scope of practice. The BOME has defined the "maximum allowable" skills for each endorsement and established statewide protocols. The endorsement process consists of education and verification.

The local EMS medical director is responsible for verifying an EMT's knowledge and skills for a particular endorsement. This can be accomplished via a training program; or the medical director may take into account an EMT's previous education, skill ability or other personal knowledge to determine whether an EMT meets the endorsement knowledge and skill requirements. The local medical director is responsible for the quality of all endorsement training via direct participation and/or oversight.

The medical director cannot exceed the scope of the endorsement, but may set limits on the ambulance service or the individual EMT. As an example, the medical director might wish the local ambulance service or an individual EMT to utilize pulse oximetry but not cardiac monitoring.

The endorsement material that follows provides the terminal knowledge and psychomotor objectives at the specific endorsement level. The endorsements (specifically at the EMT-Intermediate and EMT-Paramedic levels) may be non-specific in certain areas (such as specific medications or routes of administration) as the Board does not intend to "practice medicine". The medical director "practices medicine" and has the ability to determine the specific's concerning the endorsement. The Board approved protocols define the extent of the local medical directors flexibility: *"...The Board authorizes the service medical director to use the Board approved protocols in their entirety or may determine to limit individual EMT providers function / practice where appropriate and in accordance with provider's abilities. However, the service medical director may not significantly alter (change the performance expectations of the EMT) or expand approved Board protocols without first seeking Board of Medical Examiners approval."* If the medical director wishes to request the Board to "significantly alter" the protocol there is a process identified in the rules for that to occur.

Many of the endorsements are combinations of each other. Specifically they are: FR-Ambulance includes FR-Immobilization, EMTB-IV Initiation includes EMTB-IV Maintenance, and EMTB-Intubation includes both EMTB-Airway and EMTB-Monitoring. The endorsement levels at the EMT-Paramedic level are slightly different then at the other levels in that all of the endorsement levels

are all subsets of the Critical Care endorsement. Therefore if a Critical Care endorsement is granted to an EMT-P, they have completed all of the other endorsements. This does not work in reverse though, if an EMT-P has all of the endorsement levels but Critical Care, Critical Care is not granted by default.

The endorsement process requires that the medical director complete a specific "verification form" (certificate of completion) documenting that an individual EMT has the knowledge and skills identified at the specific endorsement level. The individual EMT then submits an application to the Board to establish the endorsement on their license. The medical director then has the option of granting permission to the individual EMT to perform the endorsement to the extent defined by the medical director. All forms and endorsement materials can be obtained from the web site; [www.emt.mt.gov](http://www.emt.mt.gov). Any questions or concerns can be addressed to Ken Threet at (406) 841-2359 or [kthreet@mt.gov](mailto:kthreet@mt.gov).

### **TERMINAL OBJECTIVE SUMMARY**

The purpose of the Monitoring Endorsement for EMT-B is to provide the EMT-B with the knowledge and skills to collect diagnostic values and initiate corrective actions including operating a pulse oximeter, blood glucose monitor, end-tidal CO<sub>2</sub> monitor, and perform manual defibrillation.

### **COGNITIVE OBJECTIVES**

At the completion of this lesson, the EMT-Basic will be able to:

- State the principles of pulse oximetry
- State the normal values for pulse oximetry
- Identify conditions which can adversely affect a patient's oxygen saturation level
- Identify conditions which can produce erroneous readings in pulse oximetry
- State the principles of blood glucose testing
- State the normal values for blood glucose levels
- Identify conditions which can adversely affect a patient's glucose level
- Identify conditions which can produce erroneous readings in blood glucose
- Describe the anatomical location of the heart in relation to the sternum and diaphragm
- Given a diagram, identify the anatomical location of the heart in relation to the sternum and diaphragm
- Given a diagram, trace the flow of blood through the heart and identify each chamber, valve and vessel
- Given a diagram of the heart's electrical conduction system, trace the pathway of a normal impulse and identify each major structure
- Define the following terms as it relates to manual defibrillation

apex  
circulatory system  
myocardium  
ischemia  
myocardial infarction  
electrical cells  
automaticity  
pacemaker cells  
mechanical cells  
P wave  
QRS complex  
T wave  
depolarization  
repolarization  
lead  
artifact  
calibration  
standardization  
defibrillation  
hypothermia  
cardioversion  
joules

List three differences between automatic and manual technology for monitor defibrillators

List three types of electrode systems used with defibrillators

List five common causes of artifacts that result in poor ECG signals

Describe the response of heart muscle cells to defibrillation

State the most critical factor in increasing survival from ventricular Fibrillation

List and discuss the treatment guidelines (protocols) for pulseless ventricular fibrillation pulseless ventricular tachycardia asystole

State the two types of documentation

Given a simulated field situation, describe the information to be included in the recorded documentation

Given a simulated field situation, identify the information to be included in the written documentation

Describe the function and purpose of preventive maintenance and preventive maintenance checklists on manual and automatic defibrillator

Describe the operation and purpose of CO2 detector

Describe the difference between colorimetric and digital CO2 detectors

## **PSYCHOMOTOR OBJECTIVES**

At the completion of this lesson, the EMT-Basic will be able to:

Demonstrate the correct application of a pulse oximetry-monitoring device.  
Demonstrate obtaining a pulse oximetry reading.  
Demonstrate ability to correctly troubleshoot and correct simple problems.  
Appropriately obtain a blood specimen for testing purposes G1-1.7 the student shall obtain a blood glucose level reading.  
Dispose of all sharps while adhering to Body Substance Isolation (BSI) procedures.  
Correctly troubleshoot and correct simple problems.  
Follow manufacturer and later developed service specific preventive maintenance procedures related to the monitoring device.  
Demonstrate proper safety techniques  
List three situations which may result in a shock to the operator of the defibrillator  
The student must demonstrate control of the emergency scene and direct the resuscitation efforts  
Demonstrate appropriate voice documentation of events on the scene  
Demonstrate appropriate written documentation of events on the scene  
Demonstrate appropriate assessment and care of the patient before, during, and after defibrillation  
Demonstrate the completion of a preventive maintenance checklist on manual and automatic defibrillators  
Given a normal ECG tracing, identify the following:  
    P wave  
    QRS complex  
    T wave  
On ECG graph paper, label the following time measurements:  
    0.04  
    3 seconds  
    Identify examples of artifacts  
List the sequence of steps necessary for manual monitoring  
Demonstrate with a manual defibrillator, how to turn on the power, attach the device to the resuscitation manikin with the adhesive defibrillator pads, determine rhythm, and deliver a shock  
Demonstrate different treatment sequences with a manual defibrillator: Multiple shocks for persistent ventricular fibrillation, shocks with conversion to normal sinus rhythm, shocks with return of a rhythm and then re-fibrillation  
Properly place electrodes in Lead II and MCL1 position for manual monitoring  
Place the paddles in appropriate position on chest for manual defibrillation  
Demonstrate correct adherence to the protocol in a simulated cardiac arrest while correctly defibrillating a manikin, with a manual defibrillator, within 90 seconds of arrival at the manikins' side  
Demonstrate SAFE use of a manual defibrillator; answer questions about the controls, disposable supplies, and maintenance; and demonstrate troubleshooting techniques  
Attach an CO2 detector and determine the presence of CO2

**LESSON PLAN:** can be obtained from the EMT-I 99 or Paramedic DOT Curriculum.

**RECOMMENDED TIME TO COMPLETE:** 4 hours for lecture and skills practice

**EQUIPMENT:**

Pulse oximetry monitoring unit  
Patient transducer and cable  
Fingernail polish remover pad  
Blood glucose monitoring unit (glucometer)  
Alcohol pad  
Dry sterile dressing bandage (Band-Aid)  
Universal precautions  
Lancet (or other piercing device)  
Test strips  
Monitoring Equipment (with strip capability)  
Full Size Manikin Capable of Presenting a Rhythm and Being Ventilated (800ml min)  
Oxygen Delivery Equipment (including ventilation devices)  
Defibrillator (manual)  
Colorimetric CO2 detectors  
Digital CO2 detectors

**OVERVIEW:**

The purpose of the Monitoring Endorsement for EMT-B is to provide the EMT-B with the knowledge and skills to collect diagnostic values and initiate corrective actions including operating a pulse oximeter, blood glucose monitor, end-tidal CO2 monitor, and manual defibrillation.

**MONTANA BOARD OF MEDICAL EXAMINERS**  
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## VERIFICATION FOR EMT-B MONITORING ENDORSEMENT

Student Name: \_\_\_\_\_ License Number: \_\_\_\_\_

I certify that \_\_\_\_\_ is competent in the following terminal objectives regarding the EMT-Basic Monitoring Endorsement. The course or education was conducted according to Board policies and procedures.

<b>COGNITIVE OBJECTIVES</b>	<b>PSYCHOMOTOR OBJECTIVES</b>
<p>State the principles of pulse oximetry</p> <p>State the normal values for pulse oximetry</p> <p>Identify conditions which can adversely affect a patient's oxygen saturation level</p> <p>Identify conditions which can produce erroneous readings in pulse oximetry</p> <p>State the principles of blood glucose testing</p> <p>State the normal values for blood glucose levels</p> <p>Identify conditions which can adversely affect a patient's glucose level</p> <p>Identify conditions which can produce erroneous readings in blood glucose</p> <p>Describe the anatomical location of the heart in relation to the sternum and diaphragm</p> <p>Given a diagram, identify the anatomical location of the heart in relation to the sternum and diaphragm</p> <p>Given a diagram, trace the flow of blood through the heart and identify each chamber, valve and vessel</p> <p>Given a diagram of the heart's electrical conduction system, trace the pathway of a normal impulse and identify each major structure</p> <p>Define the following terms as it relates to manual defibrillation</p> <p>Apex, circulatory system, myocardium, ischemia, myocardial infarction, electrical cells, automaticity, pacemaker cells, mechanical cells, P wave, QRS complex, T wave, depolarization, repolarization, lead, artifact, calibration, standardization, defibrillation, hypothermia, cardioversion, joules</p> <p>List three differences between automatic and manual technology for monitor defibrillators</p> <p>List three types of electrode systems used with defibrillators</p> <p>List five common causes of artifacts that result in poor ECG signals</p> <p>Describe the response of heart muscle cells to defibrillation</p> <p>State the most critical factor in increasing survival from ventricular Fibrillation</p> <p>List and discuss the treatment guidelines (protocols) for pulseless ventricular fibrillation pulseless ventricular tachycardia asystole</p> <p>State the two types of documentation</p> <p>Given a simulated field situation, describe the information to be included in the recorded documentation</p> <p>Given a simulated field situation, identify the information to be included in the written documentation</p> <p>Describe the function and purpose of preventive maintenance and preventive maintenance checklists on manual and automatic defibrillator</p> <p>Describe the operation and purpose of CO2 detector</p> <p>Describe the difference between colorimetric and digital CO2 detectors</p>	<p>Demonstrate the correct application of a pulse oximetry-monitoring device.</p> <p>Demonstrate obtaining a pulse oximetry reading.</p> <p>Demonstrate ability to correctly troubleshoot and correct simple problems.</p> <p>Appropriately obtain a blood specimen for testing purposes G1-1.7 the student shall obtain a blood glucose level reading.</p> <p>Dispose of all sharps while adhering to Body Substance Isolation (BSI) procedures.</p> <p>Correctly troubleshoot and correct simple problems.</p> <p>Follow manufacturer and later developed service specific preventive maintenance procedures related to the monitoring device.</p> <p>Demonstrate proper safety techniques</p> <p>List three situations which may result in a shock to the operator of the defibrillator</p> <p>The student must demonstrate control of the emergency scene and direct the resuscitation efforts</p> <p>Demonstrate appropriate voice documentation of events on the scene</p> <p>Demonstrate appropriate written documentation of events on the scene</p> <p>Demonstrate appropriate assessment and care of the patient before, during, and after defibrillation</p> <p>Demonstrate the completion of a preventive maintenance checklist on manual and automatic defibrillators</p> <p>Given a normal ECG tracing, identify the following: P wave, QRS complex, T wave</p> <p>On ECG graph paper, label the following time measurements: 0.04, 3 seconds, Identify examples of artifacts</p> <p>List the sequence of steps necessary for manual monitoring</p> <p>Demonstrate with a manual defibrillator, how to turn on the power, attach the device to the resuscitation manikin with the adhesive defibrillator pads, determine rhythm, and deliver a shock</p> <p>Demonstrate different treatment sequences with a manual defibrillator: Multiple shocks for persistent ventricular fibrillation, shocks with conversion to normal sinus rhythm, shocks with return of a rhythm and then re-fibrillation</p> <p>Properly place electrodes in Lead II and MCL1 position for manual monitoring</p> <p>Place the paddles in appropriate position on chest for manual defibrillation</p> <p>Demonstrate correct adherence to the protocol in a simulated cardiac arrest while correctly defibrillating a manikin, with a manual defibrillator, within 90 seconds of arrival at the manikins' side</p> <p>Demonstrate SAFE use of a manual defibrillator; answer questions about the controls, disposable supplies, and maintenance; and demonstrate troubleshooting techniques</p> <p>Attach an CO2 detector and determine the presence of CO2</p>

\_\_\_\_\_  
**Signature of Medical Director,**  
**responsible for the Training Program**

\_\_\_\_\_  
**PRINTED Name**

\_\_\_\_\_  
**Dated**

\_\_\_\_\_  
**Montana Physician License Number**